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To Victor Janosik/R3/USEPA/US@EPA

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Subject Review of Proposed Activated Carbon Absorption System for the Lord-Shope ISVS System & March Monthly Report on the Thermal Oxidizer

Vic,

I reviewed Lord Corporation and ARCADIS' responses to your March 7, 2006 letter. LORD is requesting that EPA approve treatment of the influent from the In-situ Vapor Stripping system using an activated carbon absorption system. I have two major concerns about the proposed system.

Frequency of Sampling for Carbon Change Outs

Data from the mid-treatment sample will be used to determine the frequency of carbon change outs for ensuring effective treatment of the gas recovered by the ISVS system.

Lord Corporation needs to submit to EPA a more vigorous plan to test for breakthrough than what is written in the proposal. Currently, Lord Corporation plans to sample monthly during the first year of operation, and they anticipate that the activated carbon may be changed every three months. Lord Corporation needs to substantiate their proposal to sample only once a month for breakthrough with calculated loading and breakthrough points for the contaminants. EPA expects that Lord Corporation will schedule changing the carbon vessels before the effective absorption point of the carbon is compromised, not afterwards.

Efficiency of Carbon Absorption System

Lord Corporation submitted to EPA an air dispersion modeling analysis for emissions of vinyl chloride from the proposed carbon absorption system using 2005 ISVS data. I have not reviewed the actual air modeling files since they were not submitted to EPA with the air modeling report. The air modeling was performed assuming that the carbon absorption system operates at 95% and 80% efficiency. The ambient air concentrations calculated for vinyl chloride are below the Region III Risk Based Concentration for vinyl chloride, and are assumed to be of tolerable risk.

I used the air modeling information calculated for vinyl chloride and applied it to three of the most prevalent contaminants in the ISVS and carbon absorption systems. I assumed the control efficiency for the carbon absorption system to be 95%, 99% and 99.5%. The results are listed below. Notice that the annual average ambient air concentrations for TCE due to emissions from the carbon absorber are greater than its RBC value for even 99.5% efficiency. If TCE were to breakthrough the carbon absorption system because the carbon was not changed in time, or if the efficiency of the system is lower than 95%, the ambient air concentrations will be much higher. If we continue to entertain Lord Corporation's request to switch over to a carbon absorption system, I suggest that we consult with the site toxicologist, Jeff Tuttle, about short-term and long-term allowable ambient air concentrations of TCE, and possibly other compounds.

I would like to note that these emission rates include data from the months of January - March, 2005. Data collected during these months were analyzed with Method TO-14 and probably underestimate the true amount of contaminants that were released during these months.

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Lord-Shope Landfill Assessment of Carbon Absorption System, Based on 2005 Landfill Gas Flowrates & Concentrations							
Assume 95% Control Efficiency							
VOC	Uncontrolled Emis Rate lbs/yr	95% Eff Control	95% Control Emis Rate g/s	Normalized Dispersion Factor (ug/m3)/(g/s)	Highest Annual Conc. From Model ug/m3	Region 3 RBC ug/m3	Above RBC Y/N
vinyl chloride	20.27	1.01	0.0000146	1.36E+02	1.98E-03	7.20E-02	N
cis-1,2-DCE	892.97	44.65	0.0006422	1.36E+02	8.73E-02	3.70E+01	N
TCE	3674.28	183.71	0.0026424	1.36E+02	3.59E-01	1.60E-02	Y
PCE	376.62	18.83	0.0002709	1.36E+02	3.68E-02	3.10E-01	N

Lord-Shope Landfill Assessment of Carbon Absorption System, Based on 2005 Landfill Gas Flowrates & Concentrations							
Assume 99% Control Efficiency							
VOC	Uncontrolled Emis Rate lbs/yr	99% Eff Control	99% Control Emis Rate g/s	Normalized Dispersion Factor (ug/m3)/(g/s)	Highest Annual Conc. From Model ug/m3	Region 3 RBC ug/m3	Above RBC Y/N
vinyl chloride	20.27	0.20	0.0000029	1.36E+02	3.96E-04	7.20E-02	N
cis-1,2-DCE	892.97	8.93	0.0001284	1.36E+02	1.75E-02	3.70E+01	N
TCE	3674.28	36.74	0.0005285	1.36E+02	7.18E-02	1.60E-02	Y
PCE	376.62	3.77	0.0000542	1.36E+02	7.36E-03	3.10E-01	N

Lord-Shope Landfill Assessment of Carbon Absorption System, Based on 2005 Landfill Gas Flowrates & Concentrations							
Assume 99.5% Control Efficiency							
VOC	Uncontrolled Emis Rate lbs/yr	99.5% Eff Control	99.5% Control Emis Rate g/s	Normalized Dispersion Factor (ug/m3)/(g/s)	Highest Annual Conc. From Model ug/m3	Region 3 RBC ug/m3	Above RBC Y/N
vinyl chloride	20.27	0.10	0.0000015	1.36E+02	1.98E-04	7.20E-02	N
cis-1,2-DCE	892.97	4.46	0.0000642	1.36E+02	8.73E-03	3.70E+01	N
TCE	3674.28	18.37	0.0002642	1.36E+02	3.59E-02	1.60E-02	Y
PCE	376.62	1.88	0.0000271	1.36E+02	3.68E-03	3.10E-01	N

March Monthly Progress Report

I also reviewed the March, 2005 monthly progress report for the Lord-Shope thermal oxidizer. For the March reporting period, three samples from the thermal oxidizer were collected and submitted for analysis using EPA Method TO-15 to an independent laboratory. Phosgene was not detected in the oxidizer's exhaust. The oxidizer's efficiency during this reporting period was an outstanding 99.8% with an influent concentration of 245 ppm.

Lord Corporation neglected to submit to EPA other information normally contained in the Monthly Report. Information that were omitted included the methane results, the landfill flow, and any information on temperature, pressure and vacuum.

If you have any questions or concerns, please contact me at x2193.

- Pat

RBC = Risk-Based Concentration

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